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THE DRAINAGE SITUATION IN NEW YORK

By Elmer O. Fippin

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THE convent garden in the town of Mauburge, valley of the river Sombre in Northern France, was famous during the seventeenth century for the quality and luxuriance of its fruits, vegetables and lawn. So remarkable were its products that a sort of divine magic was attributed to the garden and its fame reached far through France. Not until more than a century and a half later did the real secret of the success of the Monks become known. Revolutions and war scattered the devotees of this particular institution and in 1793 the land passed into the possession of the town and was converted into a park. The cutting and grading incident to this transformation revealed the explanation of these achievements. *It was underdrained.* Numerous lines of four-inch pipe traversed the garden at a depth of four feet and discharged their water into a well. The pipes were made by hand like ancient pottery. It is this bit of history, says Elliott, which leads the French agriculturists to claim the honor of the discovery of the principle of underdrains. But, as he records, they also admit their failure to be the first in their general use, which honor went to the English in the first part of the nineteenth century.

About the middle of the same century a Scotch farmer, John Johnson, wrought a transformation in his New York farm similar to that enjoyed by the convent garden mentioned. [So notable were his results that a man in that neighborhood remarked, ,'I am going to build a barn when I have my land drained and get a few of John Johnstons wheat crops."] Now, sixty or seventy years later, the Johnston form continues to give the same generous yields which made it the envy of farmers far and wide, and these crops not by their occasional occurrence but by their satisfying continuity—have made the Johnston farm well known among New York farms and marked an epoch in American Agriculture.

John Johnston laid the first tile in America about 1835, the pipes having been imported by him from Scotland, his native land. For seventeen years he had worked his farm at the head of Seneca Lake, on the east side, a farm not materially different in character of soil or situation from hundreds of other farms in New York. But, he confesses, "I never made any money, for the land was 'cold and wet' and the yield of crops indifferent." It is said that more than sixty miles of tiles drains were constructed on his 300 acre farm.

John Johnson's experiments emphasize two points: the importance of thorough soil drainage and the profit to be derived from its practice. Like the early French but fortunately to a less degree, we in New York have missed the full force of the prestige and example of John Johnston's pioneer work. While the first state to use underdrains, we have not kept pace with many states to the west of us in its application.

A clear appreciation of the operation and influence of a process always leads to its more general and successful applications. Perhaps we should review some of the effects of drainage on crop-production. Fundamentally, drainage is the removal of the excess or superfluous water from the soil by means of open or underground channels, either natural or artificial for its movement. The exact type of drains to be selected in any given situation must depend upon its possible efficiency and economy.

First of all drainage of the soil by removing the excess water renders it more firm and avoids that mireing and severe puddling so familiar on wet land.

Second, wet land is usually in bad physical condition and coincident with the establishment of good drainage may be broken down and becomes more porous, friable and easy to cultivate. An illustration of this effect is particularly noticeable in tile draining clay land. For the first few years there is a progressive increase in efficiency of the drain. As the soil slowly breaks down and deep cracks are established, water moves from the surface and from distant points into the tile with greater ease.

Third, air is more freely admitted. It is necessary to the life of the roots of most cultivated plants, and it also keeps down numerous unfavorable conditions which are associated with poor soil aeration.

Fourth, the roots of plants strike more deeply in well-drained soil. The soil is to be considered as a supply-reservoir for a number of the food materials required by plants. The depth of root penetration may be likened to the size of the outlet pipe to the reservoir. Consequently the deeper the roots penetrate, the larger is the supply of moisture and food for growth.

Fifth, food is more uniformly and largely elaborated in moist than in wet soil. This results from the better temperature, equitable moisture supply, aeration, and the development of soil organisms. The nitrogen supply is particularly affected. In wet soil available nitrogen is formed very slowly and its lack in wet land is often shown by the pale color of the foliage. This deficiency has been particularly noticed in corn on the hill lands of southern New York. Under such soil conditions manure and other forms of organic matter give only a part of their efficiency.

Sixth, the average soil temperature is raised by drainage. It is noticed that wet land is cold, as observed by Mr. Johnston on his farm, and as all observant farmers understand. The difference amounts to several degrees—often as much as ten. Drainage renders the soil earlier and to a degree increase the length of the growing season.

Seventh, more available water is retained by a well-drained soil. Some of Mr. Johnston's neighbors remarked when he began draining, that "his crop would be all dried up when the dry weather came" but they remained to be amazed at his results.

Eighth, and lastly, drainage greatly reduces heaving, that most serious of all difficulties attending crops which stand through the winter. The failure of clover in many quarters and the unevenness of wheat due to so-called winter killing may be traced to this trouble.

These effects of drainage are sufficient to put clearly before one the fundamental importance of the practice in soil management. Before good tillage, before manures and fertilizers, before good seeds, and pedigreed plants, stands the necessity for good land drainage. It is antecedent to them; basic in all phases of soil improvement where it may be lacking.

New York has somewhat over 48,000 square miles of land area. Of this, 12,000 square miles is not included in farms, and represents chiefly mountainous or rough land unsuited for farming. About 25,000 square miles is devoted to improved farms, and is occupied by some sort of cultivated crop. Viewed from another angle, there are 2000

JOHN JOHNSTON
Father of Tile Drainage in America

square miles of swamp and, at a conservative estimate, sixty per cent of the improved farm area or 15,000 square miles needs artificial drainage for its best utilization.

The land in the state in need of drainage may be divided into five groups. There is the absolutely swampy land which belongs in two groups, namely tidal marshes confined to Long Island, over 150 square miles in extent, and the fresh water swamps of the inland comprising the remaining 1850 square miles. The fomer can only be reclaimed after levees to keep out the daily tidal inundation have been constructed. Its utilization constitutes a problem such as has been solved and applied over a large area in Holland, and given highly valued land upon which the production of bulbs has been largely developed as noted in a former issue of the COUNTRYMAN.

The fresh water swamps are of great variety. Probably 500 square miles consist of muck and peat swamps, practically all of which would be productive for valuable special crops. Such land reclaimed by drainage is renowned for the growth of onions, lettuce, celery, etc., at South Lima in Livingston County, around Oneida Lake, and in the Florida section of the Wallkill valley in Orange county, not to mention numerous smaller areas which have been developed. This land is valued at several hundred dollars per acre. The South Lima land is held at from $200 to $400 per acre and the Florida land even higher.

The remaining swamp areas range in quality of soil from "quick sand" to heavy clay generally rich in organic matter. The areas are of all sizes from the large Cicero, Montezuma, and Conewongo swamps to the small hill areas of a few acres extent. In every case their condition is traceable to defective surface drainage by which the water from outside areas is allowed to accumulate upon them so that the water level is permanently at or near

HOME OF JOHN JOHNSTON, NEAR GENEVA, N. Y.

the surface and the vegetation is of the aquatic type. Elm, black ash and sometimes Tamerack thrive. One of the difficulties involved in the larger areas and one for which there is at present no adequate provision is divided ownership and riparian rights.

The second division of the state is the wet land which is a part of the farm areas and is devoted to cultivated crops. It may be divided into three groups, viz., flat clay land, flat sandy land and hill-land of various types, usually heavy loam or clay loam. These are distributed throughout the state especially in the western half. The clay and sandy lands occur in the larger stream valleys and on the lake plains. They differ in that the first owes its wet condition to the slowness with which the water which falls upon its surface is absorbed. There is some local accumulation of water and this, together with the large proportion of the year when the land is absolutely wet, keeps it continually cold and out of condition. Surface drains are extensively used, most of the land being plowed in beds with deep "dead furrows" intervening. This form of drainage is of low efficiency and because of the land occupied by drains, the inconvenience in harvesting and the expense for maintenance, it is really very expensive. Tile drains placed near the surface—eighteen inches to two and one-half feet—are much to be preferred. The interval may be from 40 to 100 feet, or it may be irregular.

The accompanying table, derived from a careful study of soil conditions, gives a more accurate idea of the relative extent of the different types of drainage conditions in representative parts of the state.

In the several areas reported, the clay soils aggregate from five to thirty five per cent of the total.

The sandy land is wet because of some impervious substratum, some basin-like formation, and when a proper outlet is established its drainage is very easy. Its extent is relatively small.

It appears from this examination of the state that drainage is needed over large areas. As one of the institute conductors and a graduate of Cornell puts it "underdrainage is the acme of good farming." It increases yields, reduces labor, equalizes time and conduces to good temper. It applies to all types of farming.

The problems which farm drainage presents deserve careful study and expert attention. Many engineering, legal, and practical problems are involved. These can be removed or mimimized. To accomplish this in some degree, the New York State Drainage Association was formed a year ago and is taking up the investigation of all these problems. The movement means co-operation, the co-ordination of the thought and efforts of the farmers of the state and of the agricultural institutions in the direction of thorough, effective and profitable land drainage.

PER CENT AND ACREAGE OF WET LAND BY COUNTIES

Area	Total %	Area acreage	Swamp		Clay		Sandy		Hill land		Actua %
			%	acreage	%	acreage	%	acreage	%	acreage	
Niagara....	84.	394,000	1.6	5,800	34.3	120,000	4.4	15.500	43.7	153,500	53.5
Wayne	80.	327,000	11.0	47,000	5.0	20,000	6.0	25,000	58.0	235,000	39.5
Madison ...	89.5	377,000	4.6	19,000	7.0	30,000	4.5	18,600	73.4	304,000	37.1
Montgomery	71.4	183,700	:7	2,000	34.5	89,500	0.5	1,300	35.7	91,000	46.5
Livingston .	71.2	284,000	1.8	7,000	9.4	38,000	8.0	31,000	52.0	208,000	35.2
Tompkins ..	84.3	265,000	2.6	8,100	14.2	44,500	.5	1,600	67.0	211,000	37.4
Dutchess ..	43.	201,000	5.	25,000	2.	15,000	3.3	17,000	30.0	149,000	19.3

LEGAL ASPECTS OF DRAINAGE

By Major J. N. Carlisle

One of the papers delivered before the First Annual Meeting of the New York State Drainage Association at Ithaca, Feb. 9, 1910.

THE question of agricultural drainage in New York State is so important that the decision of the Court of Appeals in 163 N. Y. 148, declaring the last State Drainage Law of 1895 to be unconstitutional, has thrown the matter into a great deal of confusion as to just what kind of a law can be passed covering this subject.

The decision of the Court of Appeals was based upon the sole ground that the act was unconstitutional because it contained provisions requiring the owners of lands taken, to be made to pay a part of the cost.

The legal objection to drainage legislation is based upon the Fourteenth Amendment to the Federal Constitution which provides among other things, "nor shall any State deprive any person of life, liberty or property, without due process of law" and in New York State upon that part of Section 6, Article 1 of the State Constitution which provides "nor be deprived of life, liberty or property, without due process of law; nor shall private property be taken for public use without just compensation."

It was at one time contended that the Fifth Amendment to the Federal Constitution also applied but the United Supreme Court has held that this amendment only applies to acts of the Federal Government (163 U. S. 158).

The question that therefore arises under drainage legislation is whether the taking of land by condemnation for a right of way is the taking for a "public use", if so the constitutional provisions do not apply.

The question as to what constitutes a "public use" has been the subject of repeated litigations involving statutes relating to highways, irrigation plans, water power projects, construction of levees along river banks, railroads, local improvements of streets, building of sewers, etc., and while no general rule has been laid down the courts are pretty well agreed that if the question involves the health of the community, the promotion of the prosperity and welfare of the people, or as a reasonable regulation for the general advantages of those who are treated as owners of a common property, that then the use is a public one. It is not essential that the entire community or even any considerable portion thereof, should directly enjoy or participate in it, nor is it necessary that to make the use a public one that every resident of the district should be benefited.

The power also does not rest entirely on the ground of public health; this is only one of the questions that may be raised.

The question as to drainge laws in the different states has been a repeated subject of judicial decisions both in the State courts and in the United States Supreme Court and the decisions seem to be uniform in holding that drainage laws can be upheld for any of the following purposes:

First.—Public health.

Second.—Public Use, Benefit and Utility.

Third.—Public Convenience.

Fourth.—Where the productive capacity of the soil can be increased, which will result in a benefit to the general public by adding to the peoples' resources and promote the prosperity and welfare of the people.

Fifth.—Where property which adjoins and in which several persons have a common interest cannot be fully and beneficially enjoyed in its existing conditions.

All law is a growth and as has been well stated "the question of what constitutes a public use is a subject that does not admit of an exact definition as the defined limit of today

may not answer for the changed conditions of tomorrow. From the nature of the case there can be no precise line and the power requires a degree of elasticity to be capable of meeting new conditions and improvements and the ever increasing necessity of society." (36 App. Div. N. Y. 500).

There is no doubt, due to the growth of the State the congested conditions that are now prevailing and which are certain to increase in the future, that it is absolutely necessary that our state should pass at once a drainage statute.

It has been thought by some that no relief can be had in our State without an amendment to the State Constitution but this position has no merit as it was expressly decided by the majority of the Court of Appeals in passing upon the act of 1895 as follows:

"It was the design of the recent amendment to section 7 of article 1 of the Constitution to authorize legislation providing a workable scheme by which to secure the drainage of tracts of land, whether large or small, in order to provide for their proper utilization, thus establishing it to be a part of the fundamental law of the state that such drainage constitutes a public use, and that such section is not in conflict with the Federal Constitution."

In preparing a statute I would suggest that two distinct methods be provided for:

First.—Provisions which will permit municipalities such as towns, villages, cities and counties, to commence proceedings in the name of such municipality. No constitutional objections can ever successfully prevail against this method as similar legislation in connection with highways has been upheld from time immemorial. In such class of cases there will also be no trouble in making all property owners benefited pay for their share of the benefits, and in addition money can undoubtedly be raised by general taxation to assist the project.

Second.—Provision which will permit persons or corporations to commence proceedings in their own name. In such proceedings, however, there should be no provision requiring the owner of the property crossed to pay any part of the expense, as this was the fatal defect in the Act of 1895.

In both cases the act should carefully provide for a hearing before a Court of the question as to the public use and benefits to be secured by the drainage asked for; it should provide for the appointment of commissioners to assess the damages which assessments should be confirmed by the Courts, and notice of all proceedings should be given to all parties interested.

With such legislation there ought to be no question of the courts upholding its constitutionality except in cases where one party may want to drain a very small portion of his land to the great disadvantage of others, such as for instance of a party having a small stagnant pond which would require a long ditch through his neighbor's land.

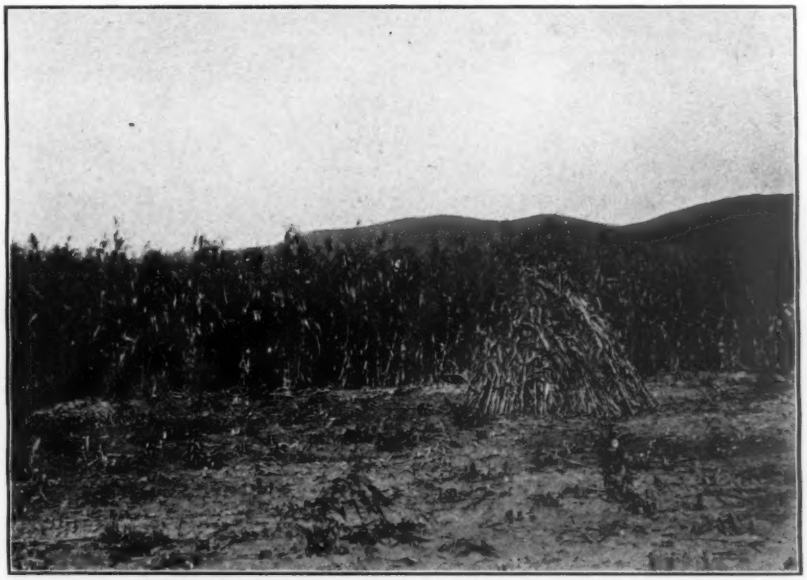
Such cases will be a matter of litigation between private parties as to whether in each particular case they should be permitted to carry out their desires. It will be hard to draw a line and say when the principle shall be applied and when it shall be denied, and, as is well stated by Mr. Justice Miller in Davidson vs. New Orleans, 96 U. S. 104, these questions can only be determined "by the gradual process of judicial inclusion and exclusion as the cases presented for decision shall require."

RECLAIMING FARM LANDS IN NEW YORK STATE

By George W. Bush
Foreman, E. H. Harriman's Estate, Arden, N. Y.

In these days, when there are few sections of free land to be opened in our Western states, and there is a great cry among the poorer classes about the cost of living, our attention is called to the production of three plants where one was formerly produced; or it may be where none were grown. The problem of reclaiming our areas of waste land is one not only attracting much attention, but a very practical one and one which was overlooked by our forefathers, so that the most valuable soil was left idle and unproductive for many generations in the mad rush along lines of the least resistance. However, with our farms as well as with other things, following along the lines of the least resistance does not as a rule lead us into the highest production.

It is said on good authority, that there is no great area in our Eastern states that would not be benefitted by drainage, not only to more quickly carry off the surplus water in time of excessive rain-fall, but to aid in the ærial circulation and moisture gathering powers in times of extreme drought. Realizing this fact and seeing the possibilities from this source, the late Edward H. Harriman, exercising his characteristic ability, as in the railroad world, purchased large areas of this seemingly waste and unproductive swamp land in Orange County and began the operations of reclamation. This has been carried on so successfully during the last five years, that at present there are several hundred acres of reclaimed land in the dominion of the estate, easily accessible and producing abundant yields of all kinds of farm and garden crops.



SOME CORN RAISED ON RECLAIMED LAND. HARRIMAN ESTATE

In the practical drainage operations it was first necessary to know whether surface water or the outcropping of underground springs was to be cared for. The former was comparatively easy. However, the second was not always an easy matter and did not always meet with complete success the first or second trial. In these operations, it was necessary to judge whether a tile would answer the purpose or whether an open ditch would be required to care for the water at all times.

In reclaiming the worst swamp land it was more important to ditch in such a manner as to cut off the feeding springs or streams before they reached the place where they spread, rather than to undertake to lead away the water from these areas.

RYE FIELD, 1909
In 1906 this field was swamp and wilderness

After sufficient main ditches had been constructed so that men could work to advantage, the work of cutting out the roots and bogs was begun by men with heavy grubbing hoes. The stumps were raised with dynamite and together the roots, stumps, and bogs were thrown on heaps and burned. After this, came the location and excavation for lateral ditches leading to the main stream or ditch. The number of these could not usually be determined at first, until a certain number were tried; in case the first system did not drain the soil quickly enough, more were supplied from time to time. The greater proportion of these were filled with tile and closed, while it was necessary to leave many open. In finding the levels for these ditches and tile drains, the experienced eye could usually tell at a glance, even if the difference between the high and low points was only slight. In laying the tile, care was taken of course to keep below the level of the plow at all times, and they were often laid as deep as three feet, in order to get the best levels. In the tile laying, where several emptied into one, five-inch tile were used in a few cases for the main outlets. Yet, as a general rule, three-inch unglazed tile with glazed tile at the outlet, as a protection and safe-guard against forst, were considered more economical. Care, at all times, was taken to see that the tile fitted closely together on a level bottom. In some instances, where the water interfered too seriously, boards were laid at the bottom, and in all cases, sod, old hay, or straw was put directly on top of the tile, in order to keep the newly stirred earth from getting into the tile and in any way causing stoppage.

As soon as the stumps, roots, and bogs were removed, sufficient ditches dug, and tile laid to draw off the surface water and protect the field from uncropping springs and as soon as the ditch banks had been moved to the low places in order to level the field and protect against cavage, the field or former bog was ready for the plow. This was no easy task, as in most cases the surface was still rough. The fall season was found to be a good time for the plowing operation, as the winter frosts are a great aid to the fitting during the following spring. The plowing was always done in about twelve pace lands and back furrowed, care being taken each time to have the back furrow in the same place and never

allowing a furrow to be turned in any direction except away from the ditch. This newly drained swampland required much harrowing for the first cropping to kill the coarse weeds and pulverize the clods, that were always found in the marsh. Corn was found to be the best crop for this new land, as it thrives better than some less hardy plants on this rough soil and is a great subduer, since its roots ramify all parts of the soil. After careful tilling and working of the corn crop, the second plowing was easy and resulted in the soil being in the finest tilth. I have seen large fields of corn growing on this kind of soil where the average man could scarcely reach the ears; no fertilizer was used except a light application of a home mixed 2–8–6 simply to liven the soil. At the second plowing, if the soil was a black muck, large yields of onions and celery have been secured. When not desirable to raise onions and celery, the fields were placed in the regular rotation when they bear abundant yields of clover and timothy. Yields of three to four tons per acre are a common sight. The seeding was best done with oats, however in many instances, rye was used with succe s.

LOADING HAY FROM SWATH. 3½ TONS PER ACRE IN 1909.
In 1905 a horse could not penetrate the wilderness on this field.

BENEFITS OF DRAINAGE ON THE GENERAL FARM

By J. D. Findlay, Salisbury Mills, N. Y.

EDITOR'S NOTE—This paper was presented by the author before the New York State Drainage Association, which met during Farmers Week at the New York State College of Agriculture.

TO me the first and greatest benefit is that you can perform your spring work, plowing and the like, much earlier than on undrained land and also sooner after rains, thus getting your crops started so much quicker. Drainage also tends to keep the moisture in the soil much longer in time of drought. It makes the ground warmer, lessens risk of surface washing and increases the fertility of the soil. It facilitates hauling larger loads any time of the year, and to those engaged in soiling is of inestimable value as cattle do not trample out the grass as in the case of wet land. As cultivation is much easier weeds are handled with less trouble. There is no freezing out of winter grain, caused by water freezing in the surface

soil. You can spread manure on side hills without much fear of loss, as frozen manure is about the last composition to yield to the sun's rays. It carries off surface water, which when left on the low places, drowns out fertility by excluding the air and heat. It prevents the soil from becoming baked and hard, enabling the young rootlets to penetrate more easily and deeper into the soil. It reduces farming from a business of uncertain and meagre profit, to one of almost certain and lucrative profit.

When your land is wet and cold, roots will not go down but spread along the surface nearest the heat. When a dry hot period sets in this plant must shrivel up while the deep rooted plant continues to grow and gives a good crop. Especially is this true with the corn and potatoes. Drainage marks the line between swamp and grain fields, between swale and grassy meadows.

The land for most part was uneven in moisture, wet patches being found over almost every field. In previous years I had done little draining to relieve this, but now I have begun in earnest. Beginning at my farm line there were 28 acres in six small fields. I put 12 men and four teams of horses to work, took out stone walls, burying all stones except the very largest which were carted to the edge of the river, and drained the land thoroughly.

Now, my practice is thorough drainage, drains from 25 to 40 feet apart and 3 to 4 feet deep. Don't make a drain here and there through your farm, but begin somewhere and make up your mind to drain it thoroughly. Drains 40 feet apart are suitable for a great many farms. Make the drains not less than 3 feet deep. If you come to a rise and fall, do not make your drain shallow in the hollow, but cut through your rise. If the latter is too great, go around, but keep your depth. Get the water table down in a wet time and up in a dry time. To a large number of farmers, the thought of draining is a terrible proposition, and the fellow who is afraid of himself is like a child taking a dose of medicine. He objects at first but when it is once down he finds that the thought of swallowing was worse than the medicine. So with the farmer, the thought of beginning is worse than the work.

In laying out a system of underdrains, one must consider two important points: the outlet, and the fall. It is often difficult to find a proper outlet on many farms. On my farm I have no difficulty as every field has enough fall. A defective outlet will surely obstruct your drains, then your time and money spent in doing this work is lost. Some farmers think the best time to drain is when the land is water soaked, so that a proper grade may be secured. In this I do not agree. I prefer to do the work when my men can work clean and dry, using the spirit-level to find the proper grade.

To begin the work of opening, take a good team and plow out two furrows right and left, then reverse and plow two more furrows just as deep as your plow will go. Have your men shovel this out. Then take your ditching plow with an evener 10 or 10½ feet long. Hitch a team of horses on each end, and this plow will root the soil a foot deep. Shovel out and use ditcher again until you have acquired the proper depth. Be sure to throw about equal quantities of dirt on each side of drain and then when ready to fill, you can plow on both sides and save time in filling. This ditcher is made by the Wilkinson Plow Co., of Toronto, Canada, and can be bought for about $13 F. O. B. your station, and will save its price in one day, as it almost does away with picking which is the heavy work of draining. Be sure to level the bottom of the ditch, and lay tile carefully. I use 3 and 4 inch tile. After laying the tile, I put about 6 inches of small stone on the top of the tile, then I cover this with 6 inches of cinders, and then another foot of field stone. Then the ditch is ready to fill again with dirt.

If the owner does not care to do the work of laying the tile, I would suggest that he be very near by, to see that the joints are properly and evenly put together in the bottom as this work is most important. If you cannot readily secure cinders or small stone, get branches from the Spruce or Hemlock. Place four or six inches of these on top of the tile before covering with the clay. This keeps the soil away from the tile for a long time, and helps lead the water into the tile through new channels. It also acts as a filter, keeping the silt out of the tile.

Open ditches are very much resorted to in Orange County on swampy, onion land. This is a much more expensive mode of drying the land than the tile drain as they are about as costly to open and every winter frost partially fills them up again; also, you must bridge to cross from one patch to another. You can buy 3-inch tile for 30 cents per rod; 4-inch tile about 35 cents per rod, F. O. B. your station.

If I were to get my choice of two things for my farm to-day, fertilizer or land drained, I would take the drain. We, in the Empire State, cannot afford longer to maintain poor, wet farms. No state in the union is as capable of growing such high grade crops as those produced in New York under thorough cultivation. With thorough drainage I have succeeded in growing 16 acres of the finest alfalfa to be found almost anywhere. This is the expressed opinion of Prof. F. A. Stevens, alfalfa expert of the state, who has visited my farm several times the past summer. To grow this king of all forage crops, I first drained thoroughly, applied 3 tons of the best lime, 40 tons manure, 500 lbs. fertilizer and 300 lbs. inoculated soil per acre, finishing up with 30 lbs. of seed, topped by complete success. The keynote of this was thorough drainage together with plenty of good lime, and an abundance of barnyard manure. These three factors coupled with thorough tillage, will raise anything that can be grown in or near our latitude.

It is my earnest hope that the farmers of our State will open their eyes to the great need and to the benefits of thorough drainage, and will roll up their sleeves and get to work in earnest. Lets not think too much about the undertaking; just get there!

THE FIRST ANNUAL CONVENTION OF THE NEW YORK STATE DRAINAGE ASSOCIATION

By Geo. A. Crabb, Secretary, Ithaca, N. Y.

ON Wednesday, February 9, 1910, occurred the first annual convention of the New York State Drainage Association. The first session which began at 10 A. M., was opened by President E. O. Fippin, who stated in his opening address the objects of the Association, which, as given in the constitution, are:

"The promotion of better drainage on the farms of New York State by the dissemination of knowledge concerning its effect upon the soil, the crop, the farmer and the community, by the encouragement of investigations which shall demonstrate the best practice in the installation of drains on all kinds of soil and with all classes of crops, and by facilitating the individual and co-operative practice of drainage thru the removal of all hindrances to its application and the establishment of adequate methods of procedure where necessary."

Acting Dean Webber then addressed the meeting on "Drainage in New York From the Point of View of the College of Agriculture." He spoke first of the physiological importance of water to plants and of the injurious effects of too much water. As examples of the latter condition he men-

tioned numerous orange groves that had been irrigated but had received a superabundance of water; and the diseased condition of the trees resulting from this. He also pointed out the similar effect on all farm crops, and the importance of drainage on our heavy soils of New York State. As examples of effects of draining heavy soils he called attention to the result shown on the University farms; where the heavy clays were undrained, the soils were dense, wet and compact;

THE OLD

they warmed up very slowly in the spring and dried slowly after heavy rains. But where the soils were drained, the fields could be planted earlier in the spring and were ready for cultivation more quickly after rains.

Dr. C. G. Elliott of the office of Drainage Investigations, United States Department of Agriculture, addressed the convention as follows: "New York was the pioneer state in drainage. Tile drains were first installed in this state over fifty years ago by Mr. Johnston, of Geneva, and by Mr. Yeomans of Wayne Co." He spoke of the spread of the work of land drainage to the west and especially called attention to those level tracts of Ohio, Indiana and Illinois where the land was formerly poorly drained and where a large part could not be cultivated for that reason. Since draining, practically every acre is cultivated and all is productive.

Dr. Elliott called to mind his father's farm located in Illinois, where, as a boy, he began studying drainage conditions and results. He said in part, "I saw the corn which grew on wet land small and yellow and that in an adjoining field which was well drained flourishing, no matter whether the weather was dry or wet, on drained land excellent crops were always produced.

In examining those plants which grew upon the wet soils I found that

THE NEW

the roots spread out near the surface, that the soil beneath was hard and firm and gummy, and, in the adjoining field, I found that the soil was mellow and the roots extended down into the ground, two, three, or four feet. When a heavy rain came the plants upon the wet soil seemed to stand still and turn yellow, while those on the drained soil kept on growing and flourishing."

In closing his address, Dr. Elliott spoke of the attitude of the United States Department of Agriculture towards drainage. The office of Drainage Investigations makes a

study of soils and soil conditions with reference to the need of drainage. It examines lands, making plans which shall show the feasability of the improvement of each project and the probable expense involved. He expressed the willingness of the Department to take up such work as fast as funds and expert assistants were available.

The next speaker was Dr. W. H. Jordan of the Geneva Experiment Station. He said there were two

BEFORE!

ways by which New York Agriculture could be advanced. First, by improving the lands possessed at present, and second by bringing into productiveness waste lands that, so far as agriculture is concerned, are now useless. He also called attention to the breadth of the subject of fertility, that it did not simply mean adding fertilizers to the soil, but that the surroundings and physical condition were at least as important, if not more so. Drainage will change the physical structure of the soil and make it more suitable for plant growth, and in that way improve the fertility of the land. In speaking of the waste lands of New York, Dr. Jordan called attention to the large area of undeveloped lands and pointed out the importance of their development, if necessary, by national assistance. The swamp lands of this state are of great importance. They are extremely fertile and their nearness to the large eastern markets makes it of even greater importance that they be developed. It is on these muck and swamp lands that the best crops of celery, lettuce, tomatoes and onions are grown. Dr. Jordan closed his address by saying that if you have good land, waste land, it will pay to improve it.

Mr. J. N. Carlisle of Watertown, then addressed the meeting on the "Legal Aspect of Drainage in New York." His address is given elsewhere in this issue, so a discussion of it at this point is useless.

After discussions on the various subjects presented the convention adjourned until 2 P. M.

AFTER!

The opening address in the afternoon was given by Mr. W. W. Ware of Batavia, N. Y., on the subject of "Draining Muck Lands." In this address he gave the method by which he had cleared and drained about 50 acres of muck land near Batavia, N.Y. He gave in detail the method of installing drains, of plowing the land, and the methods of cultivation and kinds of fertilizer used. Mr. Ware stated that as a whole, muck lands responded to the use of barnyard manure and nitrates.

After a discussion of the subject of reclaiming muck lands, the President made his annual address. In this he outlined the needs, the purpose and the organization of this association,

and emphasized the great need of drainage in New York State.

He said in part: "Next after considering the needs of drainage in this state, come methods of improving drainage conditions. First, there is needed a propaganda of education. This involves the collection of examples of the results which have been achieved, such as those presented to us by Mr. Johnston's farm, or by Mr. Martin, or by Mr. Findlay or by Mr. Ware, or by any of the numerous men throughout the state who might be mentioned. A means suggested by which such study can be brought before the association is to offer prizes to be presented at the next annual convention of this association, prizes for the best report upon methods and results of farm drainage. The expense involved and crop yields." At this time, Mr. J. D. S. Findlay of Salisbury Mills offered twenty-five dollars in gold for the best paper on actual methods and results of farm drainage on a farm not to exceed 200 acres, such paper to include in detail the cost, methods and actual returns from such systems.

"Other methods of improving the drainage conditions of the State are by the individual farmers cooperating with institutions of the state, this College or the Geneva Experiment Station. Other ways of improving conditions are for this association to maintain committees to report annually on different phases of drainage such as committees on swamp lands, muck lands, hill lands, etc. Another phase of drainage conditions needing attention is bettering the supply of drain tile and some uniform method of slating the price of tile by the manufacturers and dealers in their yards."

A still further way of improving conditions is "a study of the methods of constructing drains, including various types of ditching machines and plows, and the collection of information concerning their relative economy."

"Lastly, there is a situation which if we accept the fact that drainage is needed, requires first attention. This is the legal status of drainage. At the present time Agricultural drainage has no legal status in New York State."

Following the President's address, Mr. James D. Findlay of Salisbury Mills, gave a paper on "Benefits of Drainage on a General Farm." In this paper Mr. Findlay discussed the methods of drainage, the kind of soil drained and the benefits derived on the soil and on the crops grown.

Mr. Samuel Fraser of Geneseo, discussed "Tile Drainage for Hill Land." He gave the needs for drainage on "Hill Lands" and by figures from actual results on drained and undrained "hill lands" showed the benefits to be derived.

In the absence of Mr. T. E. Martin, of West Rush, who was to speak on "Benefits of Drainage on a Potato Farm," Mr. G. W. Dunn of Webster spoke for a few minutes giving the methods of drain construction on Mr. Martin's farm and the beneficial results on cultivation and yields that followed such drainage.

After the discussion of the various subjects presented during the afternoon session, a business meeting was called. This included the report of the committee on legislation, resolutions, new business and election of officers. The same officers that were elected at the organization of the association were retained for the ensuing year. Professor E. O. Fippin, president; Mr. Geo. A. Crabb, secretary, both of this College; and Mr. F. E. Gott, of Spencerport, N. Y., treasurer; Mr. E. B. Norris, of Sodus was elected chairman of the Advisory Board and member of the executive committee, at a meeting of the representatives of Granges and Agricultural Societies in which their organization was effected. These representatives spoke very favorably of the plan of local discussion of drainage matters in their societies and of the advisability of cooperation with the state association.

The Voice of the Tile

By M. C. Meigs

I am only a tile in an humble vocation,
Yet I greatly control your civilization.
I am very tenacious, and hard as a stone
And am like old Horatius in holding my own.
So lay me down keeping me straight in the ditch
And while you are sleeping I'll be making you rich.

If your land is too wet, and you're burdened with debt,
And encumbrance begins to accrue,
Obey Nature's Laws, by removing the cause
Drain your farm or it will drain you.

'Tis so foolish to plant where the goose and the brant
Might paddle from March to September;
You might as well sow on a November snow
And expect it to grow in December.

Some farmers are failing and weeping and wailing,
And blame the good Lord without reason,
When, if they would stop sowing seed in the slop,
They might raise a good crop every season.

Most farmers lament the money they've spent
For things only made to beguile,
But never as yet did a farmer lament,
The money expended for tile.

Every farmer of pride dearly loves to provide
For the future, the son or the daughter;
So give me the chance and I'll greatly enhance
Every acre I drain of its water.

And here's my great beauty—I'm always on duty
Out of reach of the "Bulls and the Bears"
When you're in your grave I'll continue to slave
For your children—their children—and theirs.

My habits are good, I require no food
My joints are all made without mortar,
And I always abstain when deep in the drain,
From everything stronger than water.

NURSERYMAN vs. PROFESSIONAL LANDSCAPE DESIGNER

"THE QUIP MODEST"

BUFFALO, N. Y.

EDITOR, THE CORNELL COUNTRYMAN,

My dear Sir:

The discussion commenced in your paper relative to the practice of Landscape Architecture ought to be valuable in proportion to the number of opinions gained and the point of view in which the various opinionists look at the subject. Thus, it is just as much an object to know how the nurseryman feels about combining a professional with a commercial business as it is for the strictly professional man to state his feelings and position. But, first of all, it ought to be agreed that acrimonious controversy is to be discouraged, and that what is desired are plain-spoken, calm points of view, so that each one can decide for himself the merits of the case.

One cannot question the right of the nurseryman to make plans for outdoor improvements, but, in my humble opinion, it is fair to suggest a regulation of the methods in which business is secured and executed. The writer of the first article, "Landscape Architecture from the Standpoint of the Nurseryman," does not, judging from his own words, believe in the policy of live and let live, nor does he comprehend the standards and methods of professional practice. He says, "There is but little money in drawing plans to sell outright." The man who practices Landscape Architecture in the strictest professional sense asks a fair price for his knowledge of the subject and for the labor of putting his ideas on paper for presentation to his client. The nurseryman, if the writer of the above article rightly interprets his words, depends for his profits on the nursery stock. If he is a reliable nurseryman, he must charge only reasonable profits on his produce. If he is competent, or employs a competent landscape designer, and does not charge a fair price for the advice which he furnishes, he is either robbing himself, giving something for nothing, or is unfair to those who are strictly confined to legitimate practice. It arouses one's curiosity to know which is true in the average case of trade between the nurseryman-architect and the buyer. If he is charging for his nursery stock an amount over and above what he would charge the man for whom he makes no plans and tells the purchaser that he is so charging to compensate him for making the plan, no one has cause for complaint. Does he do it? Or does he say, "I will make you a plan for nothing if you will purchase the necessary plants from me?" If he does the latter, he is in precisely the position of the architect-builder, who is, and always will be, a menace to art and has done more to deface the country than anyone except the colossal thief of beauty, the billboard man.

A perfectly fair question is here in order. Whoever saw a building of any kind with any claim to architectural merit put up by a contractor-architect? The nurseryman who is himself, or employs a landscape designer of merit, is surely entitled to increase his business by offering planting plans over small premises, when he tells his patron that he will make a fair charge for the work of planning and selecting. If he agrees to give something for nothing, he is not offering a fair deal to his client or to those who are practicing the profession with no nurseries as an adjunct. If he makes plans and specifications and reaps the cost of making them by an extra charge for the plants sold, this extra charge being in no way apparent to the purchaser, his method is not what might be called ethical. Or he certainly ought to be privileged to make suggestions for more extensive landscape improvements if he has an organization for

carrying on such work and makes a charge for the professional work involved, which anyone knows cannot be done for nothing. I say, "has an organization," for no successful landscape work can be done where competent men are not employed to construct and plant and finish. As I see it, anyone is privileged to make plans and suggest outdoor improvements if he is qualified by temperament and training to do so; but no one has the privilege of cutting into and destroying the true beauty, the nobility, I may say, of such work as we are trying to do, by cheapening it with commercial chicanery.

F. DE PEYSTER TOWNSEND,
Landscape Architect.

1910 FARMERS' WEEK

As held at the New York State College of Agriculture, Ithaca, N. Y., Feb. 7-12, 1910.

From the moment that the conductor calls out "Ithiky" and the Farmers' Week guests find themselves in the midst of the bustle and confusion of the "biggest little city," to the time when the library tower passes out of view as they journey homeward, there is "some thing doing." And that something is doing with such a vengeance that a comprehensive retrospect taken immediately after the end of the week would be something of a bewildering blur. A story of Farmers' Week must be mechanically divided up into departments, as was the program; and it is to be hoped that such a classification will not chop up the description too much, but will in fact make it more easily readable.

ANIMAL HUSBANDRY

On Tuesday, an event which created great interest was the exhibition of fat steers and fat hogs, which were slaughtered and cut up on Thursday afternoon. On Wednesday there was a cow-judging demonstration in which 105 farmers entered and six prizes were awarded. On the same afternoon there was a horse-judging demonstration. On Friday there was a hot-house lamb demonstration. Two lectures of especial interest were given by Dr. Williams on "Abortion and Sterility in Cattle" and by Dr. Moore on "Tuberculosis and its Control."

FARM ENGINEERING

In the department of Farm Engineering, the principle demonstrations were on the subject of spray nozzles. These demonstrations were carried on by means of a Sprayograph, an instrument designed last year by Professor Riley and consisting of a revolving screen with a slit in it. In testing a nozzle it was so arranged that the spray would fall on the screen. When the screen was revolved so that the slit came into the field of the nozzle, the spray would pass through and fall on a piece of white paper. By coloring the spray the fineness of the particles could easily be seen and also the evenness of distribution could be determined. Demonstrations were given of ordinary nozzles and also of nozzles made for a special purpose such as for spraying potatoes. These investigations which have been started are to be carried on by B. B. Robb, who is student assistant, and C. G. Wooster.

FARM CROPS AND FARM MANAGEMENT

The several lectures by Prof. J. L. Stone on different Farm Crops were very interesting and instructive.

Prof. P. J. White in his lecture on "How to Improve our Pastures" said, "The pastures of our state have not received the attention of which they are worthy. While the products dependent upon the pasture, such as milk and butter, have gradually increased in value, the farm pastures have been allowed to diminish in productivity."

Prof. G. F. Warren and Mr. K. C. Livermore in their lectures on "Farm Management" and "Farm Records and

Accounts," very plainly brought out the necessity of keeping a record and account of everything on a farm in order that farming be made profitable. They also gave instructions to farmers who wished to start keeping farm accounts.

HOME ECONOMICS

The fruit and flower exhibits were of passing interest to the farmers' wives, but their real enthusiasm was awakened when they came to the "Home Economics" exhibit. Here every thing imaginable of interest to the housewife was shown.

The exhibit showed the result of much thought and hard work by the members of that department. The exhibit seemed to have a threefold purpose namely, to cultivate good taste, to instruct, and to demonstrate labor saving devices. Under the first heading might be mentioned the contrasting dinner sets and the contrasting types of houses, showing the good and bad taste in house construction.

Another feature was the model traveling library. Other exhibits intended to instruct were correct food for children, the actual meals being shown for children of different ages up to eight years, then there were the home made gowns, the work of the short-course women, and a large, tempting exhibit of preserves.

Still another interesting exhibit was one showing a comparison of varying quantities of several foods, each capable of producing 100 heat calories. It took, for instance, a whole bowl of cabbage to furnish the heat equivalent of two ordinary graham crackers. The display of labor saving devices included a dish-washing machine, a fireless cooker and various kitchen and household utensils.

POTATO SHOW COMMITTEE.

Top row—Lipman Shimer Rothenberger Mayes Humphrey Darling Hahnel Fleming Getman Cole Judd

Lower row—The Misses Bennett Dudley Emley Barnes Browning Humphreys Hunn

HORTICULTURE

The program of the Department of Horticulture was arranged in three parts, that for the Fruit Grower, the Vegetable Grower and the Floriculturist. In this department there were two exhibits, a fruit exhibit and an exhibit of flowers. The first contained nearly three hundred plates, the fruit almost entirely coming from the North Rose Grange.

The Horticultural Union, which was formed last year held its first annual meeting during Farmers' Week The organization this year is to make out a list of all graduates of the College of Agriculture, Regulars, Specials and Winter Course and to briefly write each one up. In this way it will be possible to ascertain what the men are doing. The officers for the coming year are the same as those last year with the exception of J. S. Allis who replaces B. H. Crocheron on the executive committee.

The Union closed its meeting with a banquet at the Alhambra at which seventy-five of its members spent a pleasant evening swapping fruit tales. The official story tellers who were under the direction of Prof. John Craig, were F. E. Rupert, E. H. Anderson, Roy McPherson, M. G. Kains, B. J. Case and E. M. Catchpole.

POTATO SHOW

Last year, in Connection with Farmers' Week, was held a corn show at which were exhibited varieties of corn grown in the State of New York. The exhibit aroused such a great interest among the farmers that it was decided to continue the same kind of work this year; but since New York is the first state in the Union in the production of potatoes and because this crop surpasses corn in this state, it was decided to have a potato exhibit instead.

The primary object was to learn how to increase the yield. The average yield per acre, in New York 1899–1908, was 85 bushels, while that of Maine, during the same period was 171 bushels and that of Germany and England more than twice the yield of New York. In 1908, New York devoted 425,000 acres to the production of potatoes, which were valued at $26,138,000. Now how could this same acreage have been made to "bring in" just double that amount of money? This is one of the problems which were answered by some of the exhibitors.

About 700 plates of potatoes were exhibited. There were seven grange exhibits, as follows: Chili, Farmington, Hopewell, Lower Oswego Falls, McLean, Ulysses and Webster, the Oswego Falls Grange having the best exhibit. Mr. E. F. Dibble of Honeoye Falls exhibited 106 varieties. About $100 worth of prizes were presented, most of them having been donated by manufacturers of potato machinery.

Mr. A. W. Northrup of Richfield Springs received first prize for the largest average yield per acre, the field to be not less than ten acres. His average yield was 332⅓ bushels.

In connection with the exhibit was also conducted a Potato School in which men of experience spoke to and discussed the subject with the farmers. Among the prominent speakers were: J. L. Stone, E. F. Dibble, H. H. Whetzel, A. W. Gilbert, F. N. Darling, Samuel Frazer, T. E. Martin, L. C. Dodge and G. W. Herrick.

POULTRY INSTITUTE

The Poultry Educational Exhibit and Institute, held during Farmers' Week, under the auspices of the Cornell Poultry Association, proved to be a decided success, notwithstanding the fact that these functions were held in the unfinished green houses and away from all other attractions.

The Poultry Institute was held on the second floor of the greenhouse, and all seats were filled at nearly every lecture. Aside from the members of our own Poultry Staff, talks were given through the week by M. S. Gardner, Dr. Raymond Pearl, Mrs. Geo. E. Monroe, Henry Dana Smith, Miss M. E. Pennington, Dr. F. S. Jones and Miss F. E. Wheeler. Monday evening

in the auditorium, Dr. Raymond Pearl gave an eye-opening talk upon "Breeding for Increased Egg Production" in which he proved that heavy layers do not necessarily produce heavy laying progeny, but that a special strain must be developed, which is capable of propagating this virtue. Tuesday evening in the auditorium was held the banner meeting, Dr. E. M. Santee, presiding. There were speeches by President J. G. Schurman, Director H. J. Webber, Commissioner R. A. Pearson, Major J. N. Carlisle and Miss M. E. Pennington of the U. S. Department of Agriculture. Wednesday evening the meeting was in charge of the Cornell Poultry Association and the talks were all given by members of the Poultry Association.

STUDENTS' ASSOCIATION

The Students' Association of the New York State College of Agriculture has just completed a very successful annual meeting in connection with the third annual Farmers' Week. A large number of former students were in attendance and the interest shown in the adoption of the constitution and the organization of the work was great. On Thursday evening a reception to former students by faculty and undergraduates was held. The Executive Committee has been empowered to complete the details of the work of the Association and to appoint such committees as are necessary for carrying it out. The movement will be started to organize county branches, such as already exist in one or two counties in the state. Through these branches the work of the Association will largely be done. The Association is composed of all present and former students in the College of Agriculture. The life membership fee is two dollars.

The following officers were elected: President, Harry Mason Knox, Canton; first vice-president, H. N. Kutschbach, president of the Agricultural Association; second vice-president, B. D. Van Buren, Lockport; third vice-president, Charles Osborne, East Hampton, Long Island; fourth vice-president, N. R. Peet, editor of the CORNELL COUNTRYMAN; secretary-treasurer, A. R. Mann.

MISCELLANEOUS ADDRESSES AND CONFERENCES

Probably the most important lecture given in connection with Horticulture was that of Mr. F. R. Pierson, President of the American Florists' Association, in which he treated Commercial Floriculture, or the business side of raising flowers. On Tuesday, occurred the annual meeting of the New York State Plant Breeders' Association. Of great interest to the Farmers' Week visitors were the two lectures on Agricultural Chemistry given by Professor G. W. Cavanaugh, one on "The Problems of Soil Fertility" and the other a "Consultation on Questions of Fertilizers and Soil Fertility." On the same day, Dr. W. H. Jordan, Director of the Geneva Experimental Station gave an address in connection with the Farm Crops Department. That night was the occasion of several important talks. President Schurman in his address of welcome called the farmers the "constituency of the Agricultural College." He said that they wanted to tell the College what it could do for them and the college wanted to tell them what they could do for it. He said that we needed immediate funds for enlargement and that the people of New York State, realizing a good thing when they saw it, would grant these funds. Professor Jenks gave a valuable talk on "The Increased Cost of Living." Of great importance was the address by J. D. Remington, special agent of the New York Central Lines, on "Transporation and Distribution" of Fresh Food Products." At a meeting of the American Association of Agronomy, Professor Conn of Wesleyan University delivered an address on "The Relation of Bacteria to Economic Problems."

THE RAILROAD AND THE FARMER

By Vincent James Frost, 10

EDITOR'S NOTE—This article won first prize in the oratorical contest known as the Eastman Stage, which is held annually during Farmers' Week and which this year occurred on Feb. 11, in Sibley Dome.

DURING the past fifty years, the science of agriculture has advanced with mighty strides. The problems of yesterday are no longer the problems of today. Experiment stations have solved many of the difficulties confronting the farmer; the Federal Department of Agriculture has expended millions of dollars in improving the means of crop production; and Agricultural Colleges galore have trained men to demonstrate the practicality of an agricultural education. The farmer of today does not face his greatest problem in the *production of crops*. The proposition before the American farmer, and, particularly the agriculturist of the State of New York is the *marketing of the crop*, after it is produced.

It is probable that this question of marketing the product will be most satisfactorily settled when the farmers unite their forces in the "cooperative society," and retain specially trained men to keep in touch with market conditions, and superintend the actual sale and delivery of the goods. But it is also true, that the great mass of farmers at the present time are not ready to co-operate. The leading men of every community, those who are eminently fitted to organize and superintend such a co-operative scheme, have worked out and developed a special market of their own, at which they obtain a special or fancy price. These men are unwilling to unite their forces with the more inefficient man, fearing that the combined product will bring a smaller return. The ordinary man hesitates because of lack of enthusiasm or because he believes that no benefit will accrue from the union.

Applied education and the actual demonstration of a profitable co-operative society are absolutely required before the farmers of the State of New York will combine.

But what are we to do in the meantime, while the middle men are absorbing the profits of the producer, while markets are being flooded with material for which there is no local demand, and while valuable produce is being thrown away in transit to cities and towns already liberally supplied with that same article? We may still continue to trust in the wily commission merchant, who, although honest and conscientious for the most part, is subject nevertheless to human temptation. Or we may sell our produce to local shippers and dealers and allow *them* to assume the necessary risk in its sale; and incidentally assume the necessary profit. Or, if possessed with sufficient wit, we may manufacture a market of our own, and reap the benefits thereof.

All these methods of marketing our crop are proper and correct, *as far as they go*, but they do not allow for the full return from the consumer's dollar, or the rapid advancement of the farmer as a class. I would propose a simple little expedient from which the farmer might derive the benefits of co-operation, without the formality of organization. This expedient is a system of co-operation, the "co-operation of the railroad and the farmer."

We are all more or less acquainted with the history of railroad construction, how the first roads were engineered by public enterprise, later to be taken over by private companies. We are familiar with the Granger troubles of the Middle West, the fight of the grain farmer to obtain reasonable service and transportation for his crop at a reasonable rate; the unsympathetic and unyielding character of the railroad's policy, and the widespread feeling of animosity and suspicion that was developed by the farmer against railroads in general.

Those days of outward animosity

have been left behind, but the general feeling of suspicion has remained. This feeling as been fostered in many sections, it is true, by a pecularily unfair treatment of the farmer. Every act of the railroad, however, has been looked at with suspicion. If the rate on a certain article was lowered, *every farmer affected* "smelled a rat." If cars were provided quickly, the railroad was assigned some deep farfetched scheme of "doing the farmer" out of his profits.

All this is wrong. The railroad, like the farmer and every other man, is not in business "for his health." But the railroads have come to realize that suspicion and ill-feeling do not breed trade. They know that increased crops mean increased demand for transportation. It is time that the farmer, who has been perenially kicking the railroad, should wake up and *kick himself*.

One great fundamental truth should be clearly understood by both the railroad and the farmer. The Railroad cannot do business without the Farmer who produces the goods; and the Farmer cannot do business without the Railroad that transports the goods to market. The one depends upon the other.

The railroad, through its many branches, has an opportunity to obtain first hand information at all the important markets. Freight agents are personally acquainted with market conditions. They know that New York is demanding baled hay at a certain time of the year. They know when New York has enough baled hay, and when the surplus should be shipped to Philadelphia where there is a strong demand.

Freight agents know the psychological moment that a market is supplied with a certain commodity. Within a single day's time, prices may drop 20 per cent. The papers cannot get this information to the farmer in time to prevent carload after corload of valuable produce being despatched thither, all of which must be sold at a loss. For instance, Jefferson County found in New York City a fine market for hay. One fall, carload after carload of baled hay was sent down. The supply finally exceeded the demand, but the cars still continued to pour in, until the yards were lined for miles with cars of baled hay, for which there was no sale.

The Railroads have been looking at these facts and considering them. They have come to realize that increased profits from proper knowledge of market conditions mean increased working capital for the farmer. Increased working capital means greater crops. Greater crops mean increased transports for the Railroad. Their psychology, while eminently selfish at the best, nevertheless coincides with that of the farmer. Both Railroad and Farmer are thus working for the same end.

The Railroad is willing to cooperate with the Farmer in every way. This is typically illustrated by the "Agricultural Specials" run under the direction of the N. Y. Central, the Erie, and the Lehigh. The N. Y. Central at the present time is contemplating the formation of another department, whose function is the maintenance of *experimental farms* along the lines of the N. Y. Central to *demonstrate advanced methods of farming*. The Railroads have come to realize where their best interests lie. They come before the Farmer of the State of New York and say: "We realize that our interests are common. Let us co-operate." It is time that the tiller of the soil lay aside his ancient prejudices and suspicions of the Railroad, that he place confidence in their sincerity, and benefit by their advice and information.

Some day, when the farmers of the Empire State realize that the best interests of all lie in combination, we will co-operate. But before that time comes, we must form another combination, that will make New York the Empire State in truth, and that combination is "The Railroad and the Farmer."

FIELD LABORATORY REMINISCENCES

By M. F. Barrus

Assistant in Department of Plant Pathology, N. Y. State College of Agriculture

ONE of the unique features of the Department of Plant Pathology is the field laboratory work carried on by members of the Department. The first field laboratory was established near Romulus, N. Y., in 1907, for the study of black-rot of grapes. Last year six such laboratories were in operation for the study of various diseases of crops in different parts of the State, and this coming summer there will be at least ten of these laboratories from this Department. This rapid increase in number is due to the energy and persistence of Professor H. H. Whetzel in presenting the plan of operation to the growers who have so far shown a decided willingness to coöperate with the Department. The plan is simply this: The Department furnishes men and equipment for the investigation of the diseases of any crop, and the grower for his part furnishes a building or a room for a laboratory on the farm and provides the salary and expenses for the investigator. The investigation is then carefully conducted in the growers' own field, orchard, vineyard, garden, or green-house, as the case may be.

In 1908, Professor Whetzel made arrangements with the Burt Olney Canning Co., of Oneida, N. Y., to establish a field laboratory on their farm and carry on an investigation of the diseases of beans, for which purpose the writer was put on the job.

EVERYBODY WORKED WHEN PICKING TIME CAME

It was an embarrassing moment for me when I was transplanted fresh from an Indiana College to a 1,000 acre farm, superintended by an Irish man, and told to get busy. Just what I was to do was not exactly clear to me, although I knew I was there to investigate bean disease. Beans, there were all around me, acres and acres of them, and no doubt they had diseases, but my knowledge of plant diseases was rather limited and my experience in dealing with them still more so. I felt that I was to conduct an impor-

tant investigation, but my plans of operations were somewhat indefinite.

The farm owned by the company is made up of a number of separate farms purchased from time to time, and for the most part adjoining one another. These have been carefully surveyed and laid out into lots. Land levels have been determined and an extensive system of drainage planned. More than 125 miles of tile have been laid and the work is still going on. The ditches are dug with a ditching machine, and a man expert in tile laying has charge of the work.

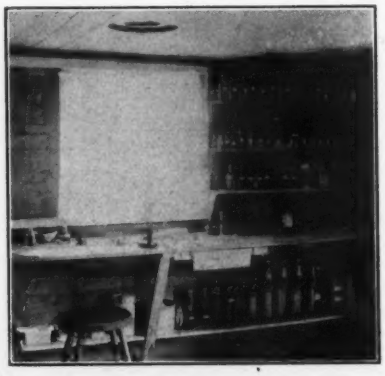
Beans are not the only crop grown but are a part of the four year system of rotation which included two cultivated crops, grain or peas and clover. Rye is grown for green manure between the two cultivated crops. The average yield of wheat was 35 bu. to an acre, (see frontispiece), 20 bu. of rye, 2½ tons of clover, 2½ tons of corn and 5 tons of beets, so it can be readily seen that the land is in a good state of fertility. In addition to beans there are grown limas, peas, sweet corn, beets, squash and pumpkins for canning purposes. The pea vines and corn husks and stalks are made into ensilage which is fed to cattle fatted on the farm during the winter.

The factory itself is located at Oneida, N. Y., a distance of one and one-half miles from the nearest point on the farm. There, another large force of laborers are employed, and the farm help is not called upon to assist execpt in case of necessity.

I was not born distinguished like some people nor have I ever acquired distinction from anything I have done, but for once in my life I had distinction thrust upon me. The knowledge that I came from a big university to doctor the beans, the sight of so many bottles filled with strong and evil smelling substances, which I had tactfully allowed to be smelled, and the fact that I lived with the boss gave me a position in their estimation which was flattering to me and very agreeable while it lasted. To them I was the "profess" a title which I jointly shared with an old Italian who had once taught school in Italy.

In addition to mycological apparatus, I had a thermograph and a rain gauge kindly loaned me by the Cornell Weather Bureau and a careful record of the weather was kept in order to note its relation to the prevalence of disease.

One does not expect to live in man-



MY LABORATORY WAS CALLED A DRUG STORE

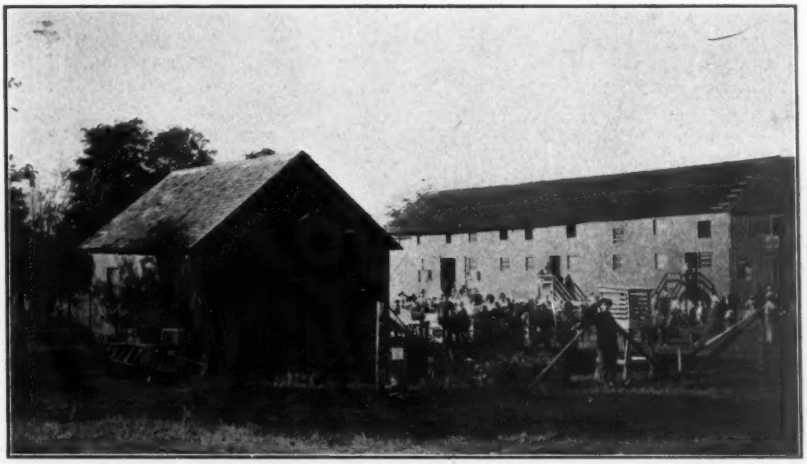
sions at summer resorts and the shelter provided my neighbors certainly lacked elegance of detail in structure. Yet they were commodious enough as a house 20x40 ft. held only eight families. Such neighborliness had its advantages for it stimulated a frequent interchange of domestic courtesies. The 600 people did their cooking in the nine or ten cooking shanties, each opened on one side and containing two stoves. This arrangement diminished the danger of fire and also prevented the odor of cooking from permeating the wholesome air of the living quarters. The people usually ate out-of-doors and sometimes all the members of a family dined around a common table. The boys and men were especially fond of sports and nearly every evening, even after a day of work, boxing, wrestling, fencing, running races and football games were the order of the day.

In one respect we might consider

the women more industrious than the proverbial Dutch house wives, for often during the summer the weekly wash was out a day earlier than the customary time. This was usually necessary if done at all, as during bean picking every week day and sometimes every day was devoted to that occupation. Some of the women, true to their native instincts, did their washing at the creek, rubbing the clothes over flat stones and rinsing them in the turbid stream.

Bean picking season was the great money making time of the year. Everybody picked except the babies and the little children who were delegated to care for them. Sometimes the babies were taken to the field and left lying at the end of the row while their mothers were picking. Two scales with four men at each scales were stationed at one side of the field and as fast as the beans were picked they were weighed up, dumped in barrels and hauled to the factory. The picker received a check in exchange, one cent per pound being paid for picking. Sometimes a good picker, while the picking was good, would earn as much as two or three dollars a day, but ordinarily one hundred pounds per day was as much as one could pick. One season a Sicilian and his family saved $800 during the season, but this was exceptional. As the people came up to the scales they took their turn in the line, which at the close of the day or at the approach of a shower assumed a length that would rival the "line-up" for registration here at the beginning of the year.

My first work after getting settled and looking over the place was to oversee the spraying. We wished to determine the efficiency of spraying for the control of Bean Anthracnose and in order to do this fifteen rows were left unsprayed through the center of each bean field for comparison with the sprayed rows. There is no doubt that Bordeaux mixture will prevent Bean Anthracnose if properly applied to the plant, but unfortunately the pods and the underside of the leaves, which are the particular points of attack by the disease, are so protected by the leaves themselves that it is very difficult if not impossible to apply the mixture to these places with the ordinary field sprayer. But with the Niagara Gas Sprayer used and the mixture delivered at 100 lbs. pressure from the side near the ground it was hoped this



A FEW STEPS IN ANY DIRECTION BROUGHT ME TO A NEIGHBORING BUILDING. THE CENTRAL STRUCTURE IS THE LABORATORY.

might be done. Every bean field, totaling more than 200 acres, was sprayed five times during the season, the spraying beginning as soon as the beans were well out of the ground and continuing every ten days or two weeks until after picking had begun. Two and sometimes three machines were kept busy during the spraying season. The mixture was made at spraying stations which were so constructed as to render the preparation of the mixture and its delivering to the machine convenient and rapid. Two men were required to attend to this work. It cost $100 to construct and equip one of these stations. There were five at various places on the farm usually located near the bank of a creek where water was abundant and yet as convenient as possible to the fields to be sprayed. One thousand dollars was expended last year by the company for bean spraying alone. So the spraying question is of sufficient importance to have its value demonstrated. This can be done by determining the amount of disease and the yield of pods on sprayed and unsprayed rows. There were many difficulties encountered in the spraying operations yet the real pinch came in determining the yield on the special rows. Space forbids more than a mere outline of the plan finally adopted. The weights of beans on the middle three unsprayed rows and of the three adjoining sprayed rows only were used in the experiment. Blue flags were staked along the center row of the three sprayed and red flags along the corresponding row of the unsprayed. These stakes were in position before picking on that field began; young men and women were selected as pickers for the special rows, twelve for the red rows and twelve for the blue. There were given ribbons to wear in color corresponding with the color of the flags in the special rows in which they were picking. These pickers were known as the "ribbon gang." A row boss was selected whose special business was to see that these pickers were where they belonged and that no one else picked in the special rows, a duty which required particular vigilance at times. Sometimes two of us, walking up and down the rows constantly,w ere unable to keep the other pickers off. Care had to be taken that the pods down to a certain size were picked clean at each picking and that the beans were correctly weighed at the scales. There a boy was stationed whose business was to record all the weights of the beans picked on the special rows as soon as they were brought to the scales. A careful estimate was made of the percentage of disease on pods of sprayed and unsprayed rows. There is no doubt that mistakes were occasionally made, but it seemed when all the pickings throughout the season from all the fields were taken into account, the results ought to be definite enough to enable one to draw some conclusions. Yet the results from the past two seasons have shown practically no increase in yield nor greater freedom from disease on the sprayed than has been realized on the unsprayed rows. The weather conditions, however, during the past two years have been unfavorable for the development and spread of anthracnose, and this disease has been so little in evidence that it is inadvisable to base conclusions on the results from the spraying that has been done. It is necessary, therefore, to continue the operation another year, or until a season does come that is wet enough to permit anthracnose to be an epidemic before satisfactory conclusions can be reached.

In addition to the above mentioned investigation a careful study of the life history of the organism has been in progress and work on other bean diseases have been undertaken. In conclusion the writer wishes to state his appreciation of the kindly attitude of the company toward his work. Every request has been complied with and every expense bill presented paid without question and without hesitation. It is to be regretted that under such favorable auspices more satisfactory results could not be obtained.

CARE OF THE EYES

[CONTINUED]

By George M. Gould, M. D.

XIV. HEADACHES.

The commonest of all diseases is headache. Great textbooks of medicine enumerate dozens of kinds of headache all ascribed to dozens of diseases of the body. Many of these books fail even to mention that faulty eyes may cause headache. The truth is that there are but few of the millions of headaches daily endured by our people which are not the result of such ill-shaped eyes.

Usually headaches are located over or about the eyes,—in the forehead, or temples; they are the simplest, one might say, the least complicated with other kinds or with other diseases. These frequently are they which usher in the life of suffering, in the head, and elsewhere throughout the body. They are almost always due to eyes working at a disadvantage. They are generally more upon one side than upon the other, and for ages these kinds have been called "hemicrania," or half-headedness. The next most frequent headaches are located in the back part of the head, while those at the top of the head are the most rare. Quite often headaches are not definitely localized, but are "general," the entire brain being affected.

The kinds of headaches are also described by hundreds of words, such as "hereditary," "blind," "nervous," "bilious," "stomach," "rush-of-blood to-the-head," etc., or as "sick," "dull," "dizzy," "sharp," "boreing," "iron-band-about-the-head," "sore," "tired" and the rest.

Every patient has his theory as to to the cause of his own headache, a theory which has usually been handed down in the family, or authorized by Dr. So-and-So. All are vague, self-contradictory, and when asked what causes the "sickheadache," the "nervous", or the "inherited" kind or the "indigestion," or the "rush-of-blood-to-the-head," there is no reason to be found. It used to be a custom to bore holes in the skull to let out the evil spirit which made such pain inside, but why he got in, and why he could not get free without the hole—this was equally difficult to explain.

Headache seems of easy explanation:—In all the past, accurate and perfect vision has been necessary to every act, word, and thought. Imperfect, distorted, and poor vision cannot be used by the brain and mind, controlling the body and nerves without excessive and deranged, or morbid action of the organs inside the skull. Headache is thus the hurt and complaint of the brain that the eyes are not working as they should. It is the cry of pain to the eyes to send up better pictures, or materials to work with, better facts concerning the world outside, so that the whole person may do things more accurately, with less danger, and with less labor to all parts.

The question is often asked, why we have so much headache, and why so many must wear spectacles nowadays? It is because in all past times the most important and most constant use of the eyes was to see the best at a distance. But within the last years, especially since printing was invented, millions of people must see accurately and too constantly within 14 inches,—that is, in reading, writing, sewing, handicrafts, etc. There is no mechanism in the eyes adapted for such constant "near-work." Consequently most modern eye-work is abnormal and hurtful.

Millions of sufferers have been relieved of headache in the past, and thousands are being cured every day, by scientific spectacles. You, also, may end this sort of suffering in the same way. Anyone who says it is not so is not the person you should consult or pay. His spectacles surely will not cure *your* headache.

The Cornell Countryman

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MARCH, 1910

Intercollege Athletics

With a first place in cross country, a second in soccer, and a rattling good basketball team, the Intercollege series look very good to the "Ags."

But as ever the times of success are more dangerous than those of failure. The basketball series is far from being completed, and there still remain untouched baseball, track and crew. So let us "keep hammering." Let the triumphs already earned give us not a temptation toward contentment, but rather a more complete realization of what is expected of us. We have succeeded, now we shall be expected to give a good account of ourselves.

It is to the crew series, that the COUNTRYMAN wishes to focus particular attention. The work will start probably a little before this issue appears; it is not too late for more men to get started but it soon will be; and our College cannot turn out a winning crew without a large bunch of candidates any more than the University can.

There are several reasons why a larger number should register for this sport than ever before. In the first place there are more students in the College, and in the second place there are more inducements. There is now an Intercollege boat house provided with showers, lockers, etc. We will have a new gig, and one all our own. Several combinations from each college will be allowed on the water instead of just one as formerly. And lastly, there are good prospects that the Intercollege race will be pulled off on Decoration Day, same day as the varsity race and under similar inspirations, i. e., the observation train and accompanying incentives.

We have the tools, the spirit and the ability. All that is necessary is application. If applied by a big bunch of enthusiastic candidates, nothing can stop us. Let's "go to it!"

The Future in Agriculture

There is sure to come in the case of each one of us, a time when we must decide upon what we are going to do for a living. For some of our readers that time has just come. For others, it may have passed and instead they may be confronted with grave doubts as to whether or not they have chosen the right course.

Both of these classes are in need of the same thing—enthusiasm. Especially is this true of those who are inclined toward agriculture, or are already engaged in its practice. There is not a wealth of enthusiasm in most country districts, due no doubt to the scattered character of the population.

And so it may be well to pause and consider some of the things which are revolutionizing modern agriculture and making it very attractive.

We are hearing a good deal about the so-called "railroad farms." They are attracting a good deal of attention because they are novel, but the significant fact about them is that they indicate the attitude of monied interests, not alone railroad interests, toward agriculture. The big men of the country, those who are financially powerful, have recognized the necessity of food producers and the desirability of a wide awake, intelligent farm vote. Their influence is rapidly making it decidedly unpopular to ridicule the farmer, to dub him "hayseed." And the way these men go at it is bound to succeed for their method is to make the farmer believe in himself. And when such men get behind a proposition, it is bound to move. The future agriculture will be a business in which the world will be interested.

And then, too, farming pays. The present agitation over high cost of living has something more to it than an attack on the food trusts. It is the revelation of a big demand for food. The trusts could not put the price of food stuffs up so high if there were an abundance of supply. The trusts do not control the supply, they manipulate the scarcity. And last year was not one of poor crops either. A more direct evidence that farming pays is the prosperity of the farmers themselves. The income of some of the fruit growers, truck gardeners, grain farmers, dairymen, and even poultrymen may well be the envy of the Kings of finance on Wall St.

Another change which has already started to make future agriculture more attractive is the availability of modern home conveniences as well as the practicability of farm machinery. The future farm house will not be dingy with smoking kerosene lamps but will be well lighted by gas or electricity. Hot and cold water system are just as adaptable in country homes as in city flats. Steam or hot water will as readily heat a farm house as it will warm an apartment. And as to farm tools, the day of the scythe and cradle have been replaced long since by the mowing machine and harvester. Even the day of the pitchfork is gone.

There are lots of other reasons why we should be enthusiastic about farming. Let us not lose courage or belief. Look around and see the fellows in the city and then take another look at your neighbors in the country.

Acknowledgment

The COUNTRYMAN wishes to take this opportunity to thank Prof. W. C. Baker, for his willing assistance and advice in connection with competition for artistic editor of the COUNTRYMAN which is now running. He has been very pains-taking in his suggestions and very patient about impressing the necessity of certain details that have been essential in some of the drawings and designs attempted. All this has been rendered freely, together with the idea which has been worked out as cover for this issue; our readers will recall the sketch which illustrated Dean Bailey's Poem, in the February, 1909, issue. The COUNTRYMAN appreciates these things and desires that good deeds should not go unacknowledged.

GENERAL AGRICULTURAL NEWS

At present there is a bill before the New York legislature to regulate the produce commission business. It proposes to compel commission merchants to take out licenses. In order to obtain such a license which would be issued by the State comptroller at a yearly cost of $2.00, the merchant must give a suitable bond for $10,000 and as a part of the bond must also agree to make full and just account of all produce received and sold by him besides making full net returns within 10 days after the sale. Any commission merchant found guilty of violating the proposed law would under the provision lose his licnese and be fined $500.00.

In Minnesota a commission has charge of bonding and licensing, In that state a consigner who does not receive a settlement from a merchant may file a complaint with the commission and sue on the bond. The proposed law in New York will probably meet with a good deal of opposition from the commission men but it should work no harsdhip to the honest and dependable firms if it could be passed and honestly enforced while it would drive the swindlers out of the business. It stands to reason that when a commission merchant handles $150.00 worth of a farmer's produce it is the same as handling so much of his cash and should be controlled and supervised as though it were in a bank.

* * *

Every farmer, fruit grower and trucker is interested in the bill now before Congress providing for the control of the purity of insecticides and fungicides, so far as they enter interstate commerce by the U. S.Dept. of Agriculture. The measure has the endorsement of all the leading national organizations representing the farmers such as the National Grange, the National Apple Growers' Congress, the National Horticultural Congress, the American Pomological Society, the Association of Economic Entomologists, etc., and also has the hearty endorsement and support of practically all the manufacturers. The use of insecticides and fungicides has increased so rapidly in the last few years that the manufacturers realize that it is of the utmost importance that standards be adopted in order that the use of the manufactured products may be on an equiable and scientific basis.

There is a very general appreciation of the need of federal legislative control due to many low grade and some evidently fraudulent insecticides and fungicides, so that no further argument for the passage of the measure would seem to be necessary. The measure is one of those many meritorious ones, which come before Congress, the passing of which will depend largely upon whether Congress feels that there is any real need or popular demand for it.

* * *

The trustees of the Carnegie Institute have decided to withdraw their $10,000, a year contribution to the work of Luther Burbank, the plant wizard of Santa Rosa. The commercialism which, it is alleged has been a feature of the experiments of Luther Burbank, is given as the cause of the withdrawal of the institutes' support.

* * *

In suits brought to recover damages for substituted trees the Michigan courts have laid down this rule: "The measure of damages is the value that would have been added to the premises if the trees had been of the varieties ordered." In order to protect themselves from unscrupulous dealers in these "substituted tree cases, the N.Y. State Fruit Growers' Association, at the last meeting proposed that a fund of ten cents out of every membership fee paid in after Jan. 1st, 1910, be set aside to push "substituted tree" cases. If any member of this association has trees delivered to him which are reasonably untrue to name the nurseryman or dealer who sold them will be prosecuted with money taken from this fund.

This is another attempt at business co-operation and it is expected that the executive committee will approve of the plan.

* * *

An important step taken by the National Corn Growers' Association at the Corn show held at Omaha was that of incorporation, a step highly commendable. Heretofore the association was informal and the avowed object was the holding of corn shows and the distribution of information concerning the best means of increasing, the quality and quantity of America's great crop. With the incorporation of this institution, comes a responsibility which the members and officers have heretofore not felt. That the effect will be wholesome is certain. The association now assumes a dignity that will certainly be beneficial; what it says will be authoritative, and on the whole the action is one a movement in the right direction.

* * *

A recent bulletin issued by the United States Department of Agriculture, entitled "Replanning a Farm for Profit," deals with principles that are vital to successful farming in the corn belt. Few farmers realize the difference in income that may be produced on their farms by the systematic introduction and rotation of clover or other leguminous crops over the entire area of their tillable land. The planning of rotations to meet certain feed requirements and to grow crops which shall be the greatest income producers under given conditions is a problem that is not easily solved by all the tillers of the soil. Farmers' Bulletin 370 assists the farmer in solving many difficulties. It discusses a run-down farm in Illinois, and plans six different types of farming that may be substituted for the usual one of corn and oats now practiced, so as to raise the income all the way from two to five times as much as that commonly received, and at the same time increase the fertility of the soil. A copy of this bulletin may be had free, on application to a member of Congress or the Secretary of Agriculture, Washington, D. C.

* * *

The New York Central has started its work of giving practical assistance to the reviving of Agriculture in New York State by its purchase of a so-called "run-down" farm at West Bergen, Monroe County. This is the first of three farms which the railroad intends to purchase and by which it hopes to show by practical example how the farm, with a reasonable expenditure, by fertilization and intelligent cultivation, can be made to yield a good living to a man and his family. Of the other two farms, one will be located in the Mohawk Valley, and another on the western slope of the Adirondacks. The railroad has chosen as its Farm Superintendent, Mr. T. E. Martin, of West Rush, N. Y. Mr. Martin is a practical farmer in the fullest sense of the word. Experiments will be conducted with and without fertilizers and spraying. The results of these experiments will be carefully watched and tabulated, and it is the expectation of the railroad that the West Bergen station will show, by August, a maximum result for a minimum expenditure.

As was noted in a preceding issue, the Pennsylvania Railroad has also bought a farm of this nature in Virginia, on which it intends to carry out similar demonstrations.

The Railroad Company is particularly anxious that they shall not be regarded as faddish or extravagant in any sense of the word. The expenditure made on each farm will be within reach of the average farmer. Each is to point out the way to the farmers of the particular section in which it is located.

CAMPUS NOTES

The regular monthly meeting of the Agricultural Association was held Tuesday evening, February 15th. The meeting opened with music by the Mandolin Club followed by a short business meeting presided over by President H. N. Kutschbach, '10. After the business meeting Professor Reis of the Geology Department gave an exceedingly interesting and instructive lecture on "Mexico." The lecture was very freely illustrated by lantern slides from photographs taken by Professor Reis during his tours in Mexico.

* * *

The committee appointed to collect subscriptions from the students for a fund to purchase a gig for the agricultural crew reports a very successful canvass up to date. It is hoped that the contract for the construction of this gig may soon be awarded. The Inter-College boat-house is nearly completed and some real crew races may be expected this spring.

* * *

A Poultry Show was held in Mechanic's Hall, Boston, Mass., from January 11 to 15. The various eastern Agricultural Colleges exhibited birds and they were all exceedingly fine specimens. One of the chief features of the show was the educational exhibit staged by Cornell University.

Several teams, representing eastern Agricultural Colleges entered into the judging contest which was open only to students. W. M. Anderson and R. L. Williams represented Cornell and won the silver cup offered by the management. Rhode Island was second.

A representative from the Agricultural College has been appointed to go to Rochester for a conference with officials of the Pennsylvaina lines in regard to running a farm special over some of their roads. The Buffalo, Rochester and Pittsburg, the Lehigh, the Lackawanna, and the Mohawk and Oneonta, also are ready to offer their lines for the purpose of running these specials.

Two of the railroads wish to distribute free literature on agriculture to the farmers along the line of these trains.

* * *

Mr. C. N. Jensen, formerly assistant in the Department of Plant Pathology, has been appointed to the position of graduate assistant in the Department of Plant Pathology at the State College of Agriculture at Berkeley, California. Mr. Jensen will carry on an investigation on the diseases of oranges under the direction of Professor R. E. Smith, Pathologist of the California Experiment Station. The work will be conducted in the research laboratory at Whittier. Mr. Jensen expects to complete there the work for his Doctor's Degree for which he was registered when he left this institution. He receives a salary of a thousand dollars, an increase of $500.00 over what he was receiving here and with the same opportunities for graduate work which he had in this institution. He was married shortly before he left Ithaca to Miss Marion Choate, of Romulus, N. Y. Mr. Jensen's place will be taken by Mr. H. L. Rees, a graduate of Wabash College, Indiana. Mr. Rees completed his work there at Christmas time.

At a meeting of the members of the Agricultural soccer team, W. C. Funk, '11, was elected captain for 1910–1911 and W. deS. Wilson, '13, was elected manager.

* * *

Professor E. J. Bailey of the English Department resumed his readings before the students of the College of Agriculture, on Tuesday, February 15th, and will continue them on Tuesdays and Thursdays throughout the winter in room 152 of the Agronomy building. Professor Bailey is an exceptionally interesting reader and the COUNTRYMAN urges the students of this College to avail themselves of this opportunity to hear good literature well read.

* * *

A meeting of Synapsis, the Plant Breeders' Club, was held in the office of the Plant Breeding Department, Wednesday, February 16th. The subject discussed was "Scientific Photography."

Wednesday evening, January 26th, a farmers' meeting was held at Danby under the direction of the Extension Department. The meeting was arranged through Amos Barnes of Danby, a former student in this College. The Glee Club quartet, Messrs. Shepard, Rogers, Laue and Emmons, furnished music. F. N. Darling, '10, spoke on "Potatoes" and Professor P. J. White on "Corn Breeding."

THE 1909-10 AGRICULTURAL CROSS-COUNTRY TEAM—INTERCOLLEGE CHAMPIONS.
Stevenson, (Capt.), Haselton, Welker, Hahnel, Kraker, Shaw.

About fifty students in Poultry Husbandry attended the International Poultry Show held in the Broadway Arsenal, Buffalo, N. Y., January 25–29, 1910. This show was very successful and it was estimated that upwards of 20,000 people visited the Arsenal which housed over 4000 birds. One feature of the show was the Educational Exhibit of the Department of Poultry Husbandry of the New York State College of Agriculture. This exhibit consisted of upwards of fifty displays, including models of laying and brooder houses, trap nests,

methods of feeding, various feeds and photographic enlargements showing methods of instruction in Poultry Husbandry at Cornell University. Some cages of birds were also exhibited showing experiments in cross breeding.

The students competed in the poultry judging contests. The Short-Course team composed of Messrs. Steer, Clery and Kazmeier won the silver cup offered to Short-Course teams by the Buffalo Poultry, Pigeon and Pet Stock Association, while the team of regular and special students, consisting of Messrs. Anderson, Schreiner and Allis, received a similar cup from the same donors. The Department of Poultry Husbandry presented gold, silver and bronze Gillepsie fobs to the students showing the greatest excellence in judging. These were distributed as follows: W. M. Anderson, gold; R. T. Williams and R. M. Steer, silver; H. K. Clery, F. W. Mazmier, T. Schreiner and C. D. Allis, bronze.

In the picking contest, open only to students, F. E. Mixa won first prize, a gold medal, and A. S. Chapin, second prize, a silver medal.

* * *

The basketball team representing the College of Agriculture added another game to their list by the Architect's forfeiting their game. On February 15th, our team suffered a reverse being defeated by the team from the College of Arts and Sciences by the score of 10–18.

* * *

The New York State Butter and Cheese Makers' Association held their annual convention at the New York State College of Agriculture, Feb. 15–17, in joint session with the Cornell Dairy Students Association.

The convention was formally opened by the address of P. P. Hubbard, Perry, N. Y., President of the Association. On the program were several lectures by members of the staff of the Department of Dairy Industry, Professors Stocking and Publow, Messrs. Ayres, Guthrie and Griffith, and Professor Wing of the Department of Animal Husbandry. Director Webber delivered an address of welcome to the Dairy Students Association on the afternoon of Feb. 15, while the feature of the evening was an address by Commissioner R. A. Pearson. Wednesday evening a banquet was held at the College after which the evening was devoted to an informal discussion, "The Future of Our Association and the Best Methods of Building It Up."

Wednesday, February 16, was "Buttermaker's Day" and Thursday, February 17th, "Cheesemaker's Day." The election of officers and business meeting was held Thursday afternoon.

* * *

At a regular meeting of the R. R. Poultry Club which is composed of Winter-Course students in the New York State College of Agriculture, at Cornell University, held on Tuesday evening, January 18th, 1910, the following resolutions were presented and unanimously adopted:

Whereas, we, the Winter-Course students in Poultry Husbandry in the New York State College of Agriculture at Cornell University, Ithaca, N. Y., realizing the necessity of education in the development of the art and science of poultry husbandry and the importance of the thorough investigation carried on and instruction given at Cornell, and

Whereas, the Poultry Department has so greatly outgrown its facilities that the Director of the College of Agriculture has said in his annual report "Enlarged quarters and facilities for the Department of Poultry Husbandry is probably the most imperative departmental need at present," and

Whereas, the buildings and equipment are positively inadequate to provide instruction to all those who have applied, and have caused the turning away of many and limiting the range of the courses offered, and whereas it is imperative, if the Department of Poultry Husbandry in the New York State College of Agriculture is to live up to the purpose for which it was originally intended, that suitable buildings be provided. Therefore be it

Resolved that this organization do respectfully beg the Legislature of the State of New York to make an appropriation sufficient to provide a building large enough for class rooms, laboratories, offices, etc. And further be it

Resolved that each member of this organization be requested to write personal letters to the legislation representing the Assembly and Senetorial districts in which they reside and that the Secretary of the organization be instructed to transmit a copy of these resolutions to the Director of the College of Agriculture, the President of the University, the Governor of the State, Commissioner of Agriculture, Members of the State Legislature, THE CORNELL COUNTRYMAN and the press generally and to others throughout the state, necessary to accomplish the purpose of this resolution.

* * *

The Tenth Annual Banquet of the College of Agriculture was held in the Armory, Monday evening, February 21st. About 375 of the faculty and students attended this affair, which was a credit to the committee and the college. A. R. Mann, '04, secretary of the College, acted as toast master, H. N. Kutschbach,'10, spoke for the regular students, G. H. Sprague for the short course. Professor Tuck and acting Dean Webber also delivered very interesting addresses. During the evening several selections were rendered by the glee and mandolin clubs.

THE 1910 AGRICULTURAL CREW.

Stephenson, (Mg'r), Munger, Sweitzer, Palmer, Centurion, Salisbury, (Capt.), Brown, Bradlee, (M. E. Coxswain), Thompson.

FORMER STUDENTS

'99, Sp.—Edgar Salinger visited the College a few days, recently. He is now in charge of the Anson Phelps Stokes estates at Norton, Conn., and Lenox, Mass.

'00, B. S. A.—C. W. Stephens is manager of the Spring Cottage Farm, Hebron, O.

'03, B. S. A.—W. J. Hard is forester for the Brookings Lumber and Box Co., of Highland, Cal. He is located at Gold Beach, Ore.

'05, B. S. A.—G. Wendell Bush has been elected a director in the company which operates a large portion of the Agricultural lands in the towns of Tuxedo and Woodbury, Orange Co., N. Y.

'05, B. S. A.—Hayes C. Taylor is principal of the Berwyn, Pa., high school.

'07, B. S. A.—Wm. J. Morse is now living at 121 V St., N. W. Washington, D. C. He is scientific assistant in the Bureau of Plant Industry.

'07, B. S. A.—Edward W. Cleeves and Miss Clara B. Duppatedt of the University of Ohio were married on Wednesday, January twelfth, 1910. Mr. Cleeves is at present manager of Glade Royal Farms at Somerset, Pa.

'08, B. S. A.—The address of E. C. Ewing is 1926 I Street, N. W. Washington, D. C.

'08, B. S. A.—George Tandy Cook is running his own farm near Ghent, Ky.

'08, W. A.—H. N. Wells is now located in Albany where he is acting as secretary to Senator Geo. H. Witter.

'08, W. A.—R. C. Baynard was married on December the twentieth, 1909, and with Mrs. Baynard he is now occupying his own farm at Carmichall, Md.

'08, W. D.—M. V. Wilkenson is managing a dairy farm for Mr. C. B. Rogers at Clinton, N. Y.

'09, B. S. A.—Rolla C. Lawry is manager of the Yesterlaid Egg Farms at Pacific, Mo.

'09, B. S. A.—E. H. Thompson is with the Bureau of Farm Management U. S. Department of Agriculture and as a representative of this department has been making a farm survey of three New Hampshire townships, in co-operation with the State Agricultural Experiment Station at Durham, N. H.

'09, B. S. A.—David H. Fullerton is attending lectures in agriculture and philosophy at the University of Berlin.

'09, B. S. A.—I. Safro is located in Dallas, Texas, where he is agent and expert for the Bureau of Entomology, U. S. Department Agriculture.

'09, B. S. A.—M. A. Travis, since June, has been superintendent on the dairy farm of Mr. Bellhover at Irvington, N. Y. The herd is made up of 45 fancy bred Jerseys used principally for breeding purposes. The barns are modern and thoroughly sanitary methods prevail, including milking machines and vacuum cleaners.

'09, B. S. A.—W. H. Stark, since June, has been working in the Stark Bros.' nurseries in Louisiana, Mo.

'09, B. S. A.—E. G. McClosky is running his home farm at Hamburg, N. Y.

'09, B. S. A.—G. C. Manroe is in charge of the country estate of Wm. Childs, Jr., at Bernardsville, N. J. The farm consists of 325 acres and general farming is practiced with timothy hay and peaches as minor specialties. Manroe says he is "getting along first rate and likes the work."

'09, B. S. A.—S. P. Hollister is in charge of gardens and orchard at the Hampton Institute, Hampton, Va., where he is teaching horticulture.

'09, B. S. A.—G. W. Myer is running his home farm at Ovid, N. Y. He has been elected lecturer of the local grange.

'09, B. S. A.—Marvin Jack was recently married and is now located on his 100 acre dairy and fruit farm at Lewiston, N. Y.

Table of Contents

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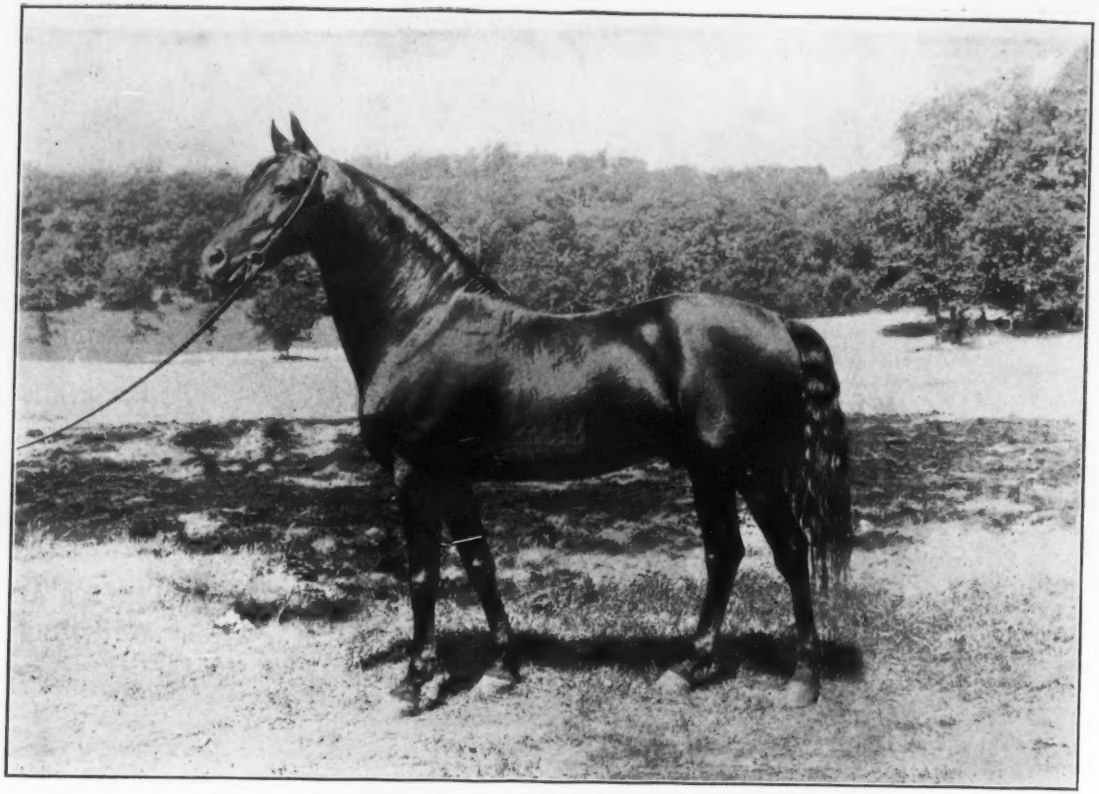

GENERAL GATES, AT THE HEAD OF THE STUD.
U. S. Morgan Farm, Middlebury, Vt. (See Page 218.)